

REMARKS

The Official Action of July 13, 2005, and the prior art cited and relied upon therein have been carefully studied. The claims in the application are now claims 1, 2, 4-8 and 11-21, and these claims define patentable subject matter warranting their allowance. Favorable reconsideration and such allowance are respectfully urged.

Claims 3, 9 and 10 have been canceled and new claims 11-21 added. Claims 1, 2, 4-8 and 11-21 remain in the application for consideration.

Applicant notes that non-elected claims 9 and 10 have been canceled.

The Examiner has rejected claims 1, 4, 7 and 8 under 35 U.S.C. §102(b) as being anticipated by Hyde '874, claims 2 and 3 under 35 U.S.C. §103(a) as being unpatentable over Hyde in view of either one of Sukenik '996 or Osgood '029, and claim 5 and 6 under 35 U.S.C. §103(a) as being unpatentable over Hyde in view of Junker '000. Applicant respectfully traverses all of these rejections as applied to the claims as amended and new claims 11-21.

Hyde discloses an improved method and apparatus for forming a hardened coating on a fluted corrugating roll. This coating provides the surface of the corrugating roll with an

optimum hardness which is able to withstand abrasive and erosive wear. As coating materials a tungsten carbide-cobalt material, or other hard carbide or oxide materials are used. The finished surface of the corrugating roll is produced by a honing operation without requiring an intermediate grinding operation. The method proposed by Hyde provides a coating which is sufficiently uniform to ensure that any variations in the thickness of the coating are maintained within a desired tolerance (see column 3, lines 52 to 58).

According to Hyde grinding operations performed on hardened coatings are disadvantageous, because the required diamond grinding wheel loses its shape and dimensional control such that the diamond grinding wheel is not capable of providing the desired dimensional tolerances of the undulated surface (see column 3, lines 25 to 42).

Thus, the method disclosed in Hyde does not concern the grinding of a fluted-roll blank using a grinding device but the coating of a fluted-roll and the postprocessing of the coating. Hyde does not teach a fluted-roll blank with a swell or grinding this fluted-roll blank by means of a grinding device such that all fluting heads have the same cross-sectional curvature in the defined longitudinal direction in order to make paper infeed as uniform as possible.

Hyde discloses a diamond grinding wheel for grinding the flutes of a corrugating roll (see column 3, lines 33 to 37). However, in order to obtain a corrugating roll having a swell and fluting heads with the same cross sectional curvature in the longitudinal direction it is compulsory to grind the heads of a corrugating roll, as taught by the claimed invention.

Hyde does not give a person skilled in the art any hint of the method for the manufacture of fluted rolls according to the present invention.

Accordingly, Applicant respectfully submits that amended independent claim 1 patentably defines over Hyde.

Applicant further submits that claim 1 patentably defines over Hyde in view of either Sukenik or Osgood for the following reasons.

Sukenik discloses a crowned corrugating roll that provides a more even corrugating force across the width of the roll (see column 1, lines 26 to 33). But due to an expensive and time-consuming manufacturing process crowned corrugating rolls are disadvantageous. Thus, Sukenik teaches to provide a corrugating machine with an elongated fluted roller and a series of fluted roll segments which cooperate with the fluted roller to form a corrugated paper medium.

Sukenik discloses a conventional corrugating roll with a swell. This conventional roll has fluting roots with the same cross-sectional curvature in the longitudinal direction. However, Sukenik does not teach how to manufacture fluted-rolls having a swell and fluting heads with the same cross-sectional curvature in the longitudinal direction.

Thus, Sukenik does not give a person skilled in the art any hint to enhance the method disclosed in Hyde in order to come to the present invention. Consequently, amended claim 1 is non-obvious over Hyde in view of Sukenik.

Osgood discloses a single facer machine for manufacturing single face corrugated paper board with a reduced sound level during operation. The sound level of the single facer machine is reduced by skewing the longitudinal axis of one corrugating roll and of a pressure roll with respect to the longitudinal axis of a corrugating roll there between (see column 2, lines 44 to 48). In order to ensure that the rolls are in contact along their entire operative length the upper corrugating roll is provided with a crown (see FIG. 4). The flutes are applied to the upper corrugating roll by using a conventional cutter tool. Since the flutes of the roll must be on a radius, the roll must be rotated as the tool moves along the roll (see column 4, lines 57 to 62).

In comparison to the claimed invention the tool disclosed in Osgood is adapted to produce flutings that are skewed relative to a longitudinal direction that is parallel to a central longitudinal axis of the corrugating roll. Furthermore, Osgood discloses a cutter tool that enables the cutting of flutes (see column 4, lines 57 to 62). Osgood does not give a person skilled in the art any hint how to manufacture a fluted roll having a swell and fluting heads with the same cross-sectional curvature in a longitudinal direction that is parallel to a central longitudinal axis of the roll.

New claim 11 contains in comparison to amended claim 1 the additional features that a displaceable grinding wheel is used in the grinding device and that the rotating grinding wheel is moved along the fluted-roll blank and upwards on a guide for height adjustment.

Although, Hyde discloses a grinding wheel, it does not teach moving the rotating grinding wheel upwards on a guide for height adjustment in order to grind fluting heads having the same cross-sectional curvature in the longitudinal direction on a fluted-roll blank with a swell.

Accordingly, Applicant respectfully submits that new independent claim 11 patentably defines over Hyde. Applicant

further submits that claim 11 patentably defines over Hyde in view of either Sukenik or Osgood for the following reasons.

Although, a grinding wheel and a fluted-roll with a swell is disclosed in Hyde and Sukenik, there is no hint that while moving the grinding wheel along the fluted-roll blank a height adjustment is required in order to obtain a fluted-roll with fluting heads having the same cross-sectional curvature in the longitudinal direction.

Osgood teaches cutting flutes into a roll while the roll is rotated. Osgood does not teach that a height adjustment is required while the grinding wheel is moved along the fluted-roll blank in order to obtain a fluted-roll with fluting heads having the same cross-sectional curvature in the longitudinal direction.

New independent claim 17 contains in comparison to amended claim 1 the additional features that a displaceable grinding wheel is used in the grinding device and that the used grinding wheel has two radially projecting annular beads and an annular recess that is disposed there-between and stands back radially.

Hyde discloses a conventional grinding wheel for grinding flutes of a fluted-roll. Hyde does not disclose a grinding wheel that has two radially projecting annular beads and an annular recess that is disposed there-between and

stands back radially. However, such a grinding wheel is required in order to grind fluting heads with the same cross-sectional curvature in the longitudinal direction.

Junker discloses a grinding wheel for grinding the required form of tapping threads in a tap drill blank. The grinding wheel comprises a lot of grinding ribs and annular recesses there-between in order to form threads in the blank. For forming threads in the blank the grinding wheel and the blank are rotated about their longitudinal axes and moved longitudinally relative to each other. Thus, the grinding wheel disclosed in Junker is not suited in order to produce flutings that run in the longitudinal direction of the blank. Consequently, the grinding wheel disclosed in Junker does not give a person skilled in the art any hint how to produce flutings that run in the longitudinal direction of a fluted-roll blank and that have fluting heads with the same cross-sectional curvature in the longitudinal direction.

Accordingly, Applicant respectfully submits that claim 17 patentably defines over Hyde in view of Junker.

Finally, neither Sukenik nor Osgood disclose a grinding wheel with two radially projecting annular beads and an annular recess that is disposed there-between and stands back radially. Thus, new claim 17 patentably defines over Hyde in view of Sukenik or Osgood.

Appln. No. 10/617,305
Amdt. dated October 11, 2005
Reply to Office Action of July 13, 2005

The prior art documents made of record and not relied upon have been noted along with the implication that such documents are deemed by the PTO to be insufficiently pertinent to warrant their applications against any of applicant's claims.

Favorable reconsideration and allowance are earnestly solicited.

Respectfully submitted,

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